

VOL'MIR, A. S.

20

PHASE I BOOK EXPLOITATION

SOV/6085

Nauchnoye soveshchaniye po teplovym napryazheniyam v elementakh turbomashin.  
2d, Kiyev, 1961.

Teplovyye napryazheniya v elementakh turbomashin; doklady nauchnogo soveshchaniya, vyp. 2 (Thermal Stresses in Turbomachine Parts; Reports of the Scientific Conference, no. 2). Kiyev, Izd-vo AN UkrSSR, 1962. 174 p. 1800 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut mehaniki.

Resp. Ed.: A. D. Kovalenko, Academician, Academy of Sciences UkrSSR; Ed.: T. K. Reznennik; Tech. Ed.: A. M. Lisovets.

PURPOSE: This collection of articles is intended for scientific workers and turbine designers.

Card 1/6

Thermal Stresses (Cont.)

SOV/6086  
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**COVERAGE:** The book contains 18 articles dealing with investigations connected with thermal stresses in turbine components. Individual articles discuss thermoelasticity, thermoplasticity, thermal conductivity, and temperature fields. No personalities are mentioned. References accompany 17 articles. The conference recommended broadening the theoretical and experimental investigations of aerothermoelastic and aerothermoplastic problems, the development of investigations of general problems of the theory of thermoelasticity and thermoplasticity based on the thermodynamic principles of reversible and nonreversible processes, the development of effective calculation methods for thermal stresses taking into account plastic deformations and creep in thin- and thick-walled structural members under stationary and nonstationary operating conditions, the development of experimental-research methods for thermometry and tensiometry in connection with modern operational conditions of mechanical structures, and the broadening of investigations of problems in the thermostrength of structures, especially of those operating under conditions of frequent and sharp temperature changes.

Card 2/6

## Thermal Stresses (Cont.)

SOV/6086

Shevchenko, Yu. N. [Kiyev]. Application of the Theorem of Reciprocity of Work to the Investigation of Elastic-Plastic Problems 62

Shevchenko, Yu. N. [Kiyev]. State of Stress of Rapidly-Rotating Non-uniformly Heated Disks Under Power-Law Plasticity Conditions With Strain Hardening 75

Vol'mir, A. S., and P. G. Zykin [Moscow]. Stability "in the Large" of Shells Under Creep Conditions 81

Podstrigach, Ya. S., and V. Yu. Kruchkevich [L'vov]. On the Effect of Inertial Forces on the State of Stress Caused by Periodic Changes in the Temperature Field 90

Komarov, G. N., Z. D. Kostyuk, M. B. Ustinovskiy, and G. A. Tabiyeva [Kiyev]. Measuring Temperatures and Deformations in a Medium-Thick Disk 97

Card 4/6

SAVIN, G.N., otv.red.; ADADUROV, R.A., red.; ALUMYAE , N.A., red.; AMBARTSUMYAN, S.A., red.; AMIRO, I.Ya., red.; BOLOTIN, V.V., red.; VOL'MIR, A.S., red.; GOL'DENVEYZER, A.L., red.; GRIGOLYUK, E.I., red.; KAN, S.N., red.; KAMISHIN, A.V., red.; KIL'CHEVSKIY, N.A., red.; KISELEV, V.A., red.; KOVALENKO, A.D., red.; MUSHTARI, Kh.M., red.; NOVOZHILOV, V.V., red.; UMANSKIY,A.A., red.; FILIPTOV, A.P., red.; LISOVETS, A.M., tekhn. red.

[Proceedings of the Second All-Union Conference on the Theory of Plates and Shells] Trudy Vsesciuznoi konferentsii po teorii plastin i obolochek. 2ü, Lvov, 1961. Kiev, Izd-vo Akad.nauk USSR, 1962. 581 p.

1. Vsesoyuznaya konferentsiya po teorii plastin i obolochek. 2,  
Lvov, 1961. (MIRA 15:12)

(Elastic plates and shells)

AGAMIROV, V.L., kand. tekhn. nauk; AMEL'YANCHIK, A.V., inzh.;  
ANDREYEVA, L.Ye., kand. tekhn. nauk; BIDERMAN, V.L., doktor  
tekhn. nauk; BOYARSHINOV, S.V., kand. tekhn. nauk; VOL'MIR,  
A.B., prof., doktor tekhn. nauk; DIMENTBERG, F.M., doktor  
tekhn. nauk; KOSTYUK, A.G., kand. tekhn. nauk; MAKUSHIN, V.M.,  
kand. tekhn. nauk; MASLOV, G.S., kand. tekhn. nauk; MALININ,  
N.I., prof., doktor tekhn. nauk; PONOMAREV, S.D., prof. doktor  
tekhn. nauk; PRIGOROVSKIY, N.I., prof., doktor tekhn. nauk;  
SERENSEN, S.V., akademik; STEPANOVA, V.S., inzh.; STRELYAYEV,  
V.S., inzh.; TRAPEZIN, I.I., prof., doktor tekhn. nauk;  
UMANSKIY, A.A., prof., doktor tekhn. nauk; FEODOS'YEV, V.I.,  
prof., doktor tekhn. nauk; SHATALOV, K.T., doktor tekhn. nauk;  
YUMATOV, V.P., kand. tekhn. nauk; BLAGOSKLONOVA, N.Yu., red.  
izd.-va; YEVSTRAT'YEV, A.I., red. izd.-va; SOKOLOVA, T.F.,  
tekhn. red.

[Manual for a mechanical engineer in six volumes] Spravochnik  
mashinistroitelia v shesti tomakh. Red. sovet N.S. Acherkan i  
dr. Izd.3., ispr. i dop. Moskva, Mashgiz. Vol.3. 1962. 651 p.  
(MIRA 15:4)

1. Akademiya nauk USSR (for Serensen).  
(Machinery--Design)

10.5600  
17.8000

32830  
S/020/62/142/002/008/029  
B104/B138

AUTHORS: Bozhinskiy, A. N., and Vol'mir, A. S.

TITLE: Experimental investigation of the stability of cylindrical shells above the elastic limit

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 2, 1962, 299-301

TEXT: The stability of closed circular cylindrical shells within and above the limit of elasticity of A16T (D16T) duralumin was studied in 30 specimens subjected to axial compression. The length L was double the radius R of the wall center.  $R/h$ , where h is the wall strength, varied between 25 and 135. The specimens were divided into three groups. In the first one,  $R/h$  ranged between 80 and 130. The stability of the relevant specimens, which buckle within the limits of elasticity, is lost abruptly and rhombic indentations are formed.  $R/h$  of the second group ranged between 35 and 80. In this group, the compressive stress at the moment of buckling was above the elastic limit of the material. The stability of the shells is destroyed by the abrupt formation of indentations. The third group consists of shells with  $R/h$  between 25 and 35.   
Card 1/2

Experimental investigation ...

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S/020/62/142/002/008/029  
B104/B138

35. The stability in these shells is destroyed by the development of a continuous ring-shaped bulge. A theoretical study of the results shows that the effect of the geometric nonlinearity, which is of prime importance in the elastic stability of shells, gradually becomes smoothed out of range shell deformation. As plastic deformations in the plastic region develop, asymmetric bulgings become axisymmetrical. The stability of thick shells is calculated by a small-scale examination of the bulging. There are 3 figures and 5 references: 4 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: G. Gerard, J. Aeronaut. Sci., 24, no. 4 (1957).

PRESENTED: August 31, 1961, by A. Yu. Ishlinskiy, Academician

SUBMITTED: July 25, 1961

Card 2/2

PHASE I BOOK EXPLOITATION

SOV/6814

Vol'mir, Arnol'd Sergeyevich

Ustoychivost' uprugikh sistem (Stability of Elastic Systems) Moscow,  
Fizmatgiz, 1963. 879 p. 7000 copies printed.

Ed.: I. K. Snitko; Tech. Ed.: K. F. Brudno.

PURPOSE: The book can be useful to scientific workers, engineers, designers, and senior students of technical schools of higher education majoring in structural mechanics.

COVERAGE: This monograph summarizes methods of investigating elastic and plastic buckling behavior and of designing for stability those structures which have at present the most practical importance (e.g., columns, plates, and shells). An extensive Soviet and non-Soviet bibliography is provided. Theoretical and empirical data obtained by

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2

**Stability of Elastic Systems****SOV/6514**

the author and his coworkers on the dynamic stability of elastic systems (buckling of shells, in the large, creep, etc) are also included, and many modern problems, especially those, which have arisen in aircraft construction, are discussed. The text is illustrated by numerical examples, photographs, tables, and diagrams, which can be used in practical designing. Ch. 13 and paragraph 160 of Ch. 15 are written by I. I. Trapezin; Ch. 16, by L. M. Kurshin. The author thanks: V. I. Feodos'yev, V. V. Bolotin, I. I. Vorovich, V. M. Darevskiy, B. G. Korenev, G. F. Laptev, B. P. Makarov, R. G. Surkin, A. A. Umanskiy, I. N. Zemlyanskikh, I. G. Kil'dibekov, and E. D. Skurlatov. There are 468 references.

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| 1. Basic concepts  | 13 |
| 2. Stability of a column hinged at the ends. Euler's formula | 15 |

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2/2

VOL'MIR, A.S. (Moscow)

"Important problems in the theory of stability of shells"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

UMANSKIY, A.A.; AFANAS'YEV, A.M.; VOL'MIR, A.S.; GRIGOR'YEV V.N.P.;  
KODANEV, A.I.; MAR'IN, V.A.; NOVITSKIY, V.V.; TIKHOMIROV,  
Ye.N., retsenzent; SNITKO, I.K., red.

[Collection of problems on the strength of materials]  
Sbornik zadach po soprotivleniiu materialov. Izd.2.,  
perer. i dop. Moskva, Nauka, 1964. 550 p. (MIRA 18:1)

L 11312-65 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/EWP(t)/EWP(k)/EWP(b)/  
EWA(h) Pf-h/Ps EM/JD  
ACCESSION NR: AP4045014

S/0145/64/000/007/0026/0030

AUTHOR: Vol'nir, A. S. (Doctor of technical sciences, Professor);  
Kil'dibekov, T. U. (Engineer)

TITLE: Investigation of behavior of shells and plates under impact

SOURCE: IVUZ. Mashinostroyeniye, no. 7, 1964, 26-30

TOPIC TAGS: shell impact, plate impact, shell impact buckling, plate impact buckling

ABSTRACT: The buckling of a double-curvature shell of arbitrary shape caused by a "longitudinal" impact, which produces displacements in the middle surface of the shell, is discussed. A system of three differential equations of the theory of elastic thin shells and plates describing the dynamic behavior of a shell under impact with consideration of inertia forces produced by these displacements is derived, from initial expressions for strains in the middle surface, the strain compatibility equation, equilibrium equations, and stress-strain relationships. These equations contain the dynamic-stress, deflection, and curvature functions related to the middle surface of the shell.

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ACCESSION NR: AP4045014

By equating one curvature of the shell to zero and the other to  $1/R$  (where  $R$  is the curvature radius of the middle surface) or by setting both curvatures equal to zero, a set of equations for a circular cylindrical shell or for a plate will be obtained, respectively. In a particular case, when the problem is static, the system of final equations turns into a regular system of equations of the nonlinear theory of plates and shells. By rejecting the nonlinear terms and disregarding the initial imperfections, the basic equations of the dynamic linear theory can be obtained. The integration of the final equations can be carried out on an electronic digital computer by using some numerical method, e.g., the method of finite differences. Orig. art. has 13 formulas.

ASSOCIATION: Ufimskiy aviationsionnyy institut (Ufa Aviation Institute)

SUBMITTED: 06Mar64

ATD PRESS: 3100

ENCL: 00

SUB CODE: AII

NO REF Sov: 002

OTHER: 001

Card 2/2

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001860620016-1

5748024

VOL'KIN, A.S., prof., doktor tekhn. nauk (Moskva)

Stability criteria for shells. Rassch. prostr. knestr. 42.9:17-127  
164.

(NPA 17:11)

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001860620016-1"

ACCESSION NO.: APL037099

S/0258/64/004/002/0263/0265

AUTHORS: Vol'mir, A. S. (Moscow); Kil'dibekov, I. G. (Moscow)

TITLE: Linear theory of stability of cylindrical shells

SOURCE: Inzhenernyy zhurnal, v. 4, no. 2, 1964, 263-265

TOPIC TAGS: cylindrical shell, shell stability, critical stress, combined stresses, radius of curvature

ABSTRACT: The authors show that computational formulas for the basic cases of stressed shells of average and great length can be obtained with the help of the so-called momentless theory of shells. This approach differs from that of V. M. Daryevskiy, who proposed a variant of the original system of equations, introducing terms which characterize tension of the averaged surface. The authors also derive some simple approximations for the parameter of upper critical stresses. They mention that in the case of combined stresses these methods may also be applicable. Orig. art. has: 9 formulas.

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ACCESSION NR: AP4042536

8/0022/64/017/003/0065/0070

AUTHOR: Vol'mir, A. S.; Kil'dibekov, I. G.

TITLE: Nonlinear acoustic vibration of a cylindrical shell

SOURCE: AN ArmSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, v. 17, no. 3, 1964, 65-70

TOPIC TAGS: acoustic vibration, nonlinear acoustic vibration, forced nonlinear vibration, shallow panel, cylindrical panel, shallow cylindrical panel, panel vibration, free acoustic vibration, forced acoustic vibration

ABSTRACT: Natural and forced nonlinear vibrations of circular cylindrical panels induced by pulsation of the acoustic pressure are investigated. The dynamic behavior of panels having a "perfect" shape of and those with initial imperfections in the form of the middle surface is analyzed by applying E. I. Griglyuk's method of determining amplitude-frequency characteristics. The agreement between the results of this investigation and data obtained by the "harmonic-balance" method by G. V. Mishenkov is mentioned. The panel is subjected to

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ACCESSION NR: AP4042336

compression along the generatrix and to acoustic uniform time-dependent pressure varying in accordance with the cosine law. Using regular initial differential equations of elastic-shallow-shell theory describing the stress-strain relationships in a simply supported shell with middle-surface irregularities, an ordinary differential equation which describes (in the first approximation) the non-linear acoustic vibrations of the panel is obtained by applying the Bubnov-Galerkin method. Expressions for a "perfect" panel and for free vibrations can be deduced from this equation by equating to zero corresponding nondimensional parameters. The static equilibrium and the amplitude-frequency relationships of the panel are analyzed for various curvature and surface-irregularity parameters, and are illustrated by diagrams. Orig. art. has: 4 figures and 16 formulas.

ASSOCIATION: Moskovskiy Aviatsionnyy Institut (Moscow Aviation Institute)

SUBMITTED: 22 Feb 54

ATD PRESS: 3076

ENCL: 00

SUB CODE: AB

NO REF Sov: 005

OTHER: 004

Card  
2/2

AGAMIROV, V.L.; VOL'MIR, A.S.

Stability of a cylindrical shell under a longitudinal impact.  
Dokl. AN SSSR 157 no. 4:307-308 Jl '64. (MFA 17.7)

1. Predstavлено академиком Yu.M.Rabotnovym.

L 63864-65 EWT(d)/EWT(a)/EWP(w)/EWA(d)/EWP(v)/EWP(k)/EWA(h) WD/EM/GS  
 ACCESSION NR: AT5017584 UR/0000/65/000/000/0143/0152

AUTHORS: Agamirov, V. L. (Moscow); Vol'mir, A. S. (Moscow)

2/

2+1

TITLE: The behavior of cylindrical shells under longitudinal impact

SOURCE: Vsesoyuznaya konferentsiya po problemam ustoychivosti v stroitel'noy mekhanike, Moscow, 1963. Problemy ustoychivosti v stroitel'noy mekhanike (Problems of stability in structural mechanics); trudy konferentsii. Moscow, Stroyizdat, 1965, 143-152

TOPIC TAGS: shell theory, cylindrical shell, structural strength, structural property

ABSTRACT: Axial impact loading of cylindrical shells was studied on an example of a shell fixed at one end and undergoing an axial impact from a rigid mass. The following system describes the motion of an element of the cylindrical shell:

$$\begin{aligned} \frac{D}{h} \nabla^4 (\omega - \omega_0) &= L(\Phi, \omega) + 2\tau \frac{\partial^4 \omega}{\partial x \partial y} + \frac{1}{R} \cdot \frac{\partial^4 \Phi}{\partial x^2} - \\ &- \frac{\rho}{Eg} (1 + \mu) \left( \nabla^4 w + \frac{1}{R} \right) \frac{\partial^4 \Phi}{\partial r^4} - \frac{\rho}{g} \cdot \frac{\partial^4 \omega}{\partial r^4}; \\ &\frac{1}{E} \left[ \nabla^4 - \frac{\rho}{Eg} (1 - \mu^2) \frac{\partial^4}{\partial r^4} \right] \left[ \nabla^4 - \frac{2\rho}{Eg} (1 + \mu) \frac{\partial^4}{\partial r^4} \right] \Phi = \end{aligned}$$

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L 63864-55

ACCESSION NR: A15017594

$$= -\frac{1}{2} [L(w, w) - L(w_0, w_0)] - \frac{1}{R} \cdot \frac{\partial^2 (w - w_0)}{\partial x^2};$$

$$\frac{\partial^2 \epsilon}{\partial x \partial y} = -\frac{\partial^2 \Phi}{\partial x^2 \partial y^2} + \frac{\rho}{Eg} \cdot \frac{\partial^2}{\partial t^2} \nabla^2 \Phi - \left(\frac{\rho}{Eg}\right)^2 (1 - \mu^2) \frac{\partial^2 \Phi}{\partial t^2},$$

where  $L(\dots)$  is a known operator,  $\phi$  is the dynamic stress function at the center of the shell surface and is related to the stresses  $\sigma_x$  and  $\sigma_y$  by the formulae

$$\sigma_x = \frac{\partial^2 \Phi}{\partial y^2} - \frac{\rho}{Eg} (1 + \mu) \frac{\partial^2 \Phi}{\partial t^2};$$

$$\sigma_y = \frac{\partial^2 \Phi}{\partial x^2} - \frac{\rho}{Eg} (1 + \mu) \frac{\partial^2 \Phi}{\partial t^2},$$

in which  $w$  and  $w_0$  are full and initial displacements, and  $R$  is the shell radius.

Trigonometric functions are given for defining instantaneous values of the amplitudes  $w$  and  $w_0$ . An example is shown of the results of calculating the strain versus time characteristics for a particular set of shell geometry and impact condition parameters. The longitudinal location of zones of maximum deflection is discussed for certain problem conditions. A description is also given of a series of experiments performed to determine the behavior of duraluminum cylindrical shells under axial impact. A diagram of the experimental apparatus is shown in

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ACCESSION NR: AT5017584

Fig. 1 on the Enclosure. The specimens were exposed to impact from a weight falling from known heights, with the impact held to an axial path by means of a guy wire mounted coaxially with the specimen. The results of the tests were in agreement with theoretical concepts. Graphs are presented showing the relationship of critical compressive stresses to the relative masses of the falling weight and of the shell, for particular sets of shell geometry and weight speed-at-impact parameters. Photographs of tested specimens are shown and discussed. Orig. art. has: 6 equations and 9 figures.

ASSOCIATION: none

SUBMITTED: 12Fub65

ENCL: 01

SUB CODE: AS

NO REF Sov: 001

OTHER: 001

Card 3/4

L 63864-65  
ACCESSION NR: A15017584

ENCLOSURE: 01

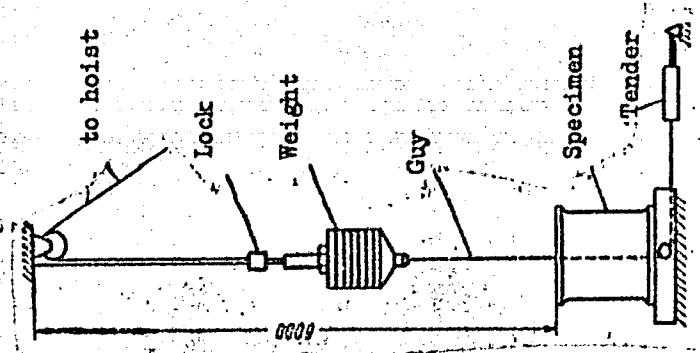


Fig. 1.

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L 52290-65 EWT(d)/EWT(1)/EWT(m)/EWP(w)/EWA(d)/EWP(r)/EWP(k)/EWA(h) Pf-4/Peb

JD/WM/EM

ACCESSION NR: AP5011584

UR/0198/65/001/003/0001/0009

36

35

B

AUTHORS: Vol'mir, A. S. (Moscow); Kil'dibekov, I. G. (Moscow)

TITLE: Stochastic characteristics of cylindrical shell behavior under acoustic loads

SOURCE: Priklychnaya mekhanika, v. 1, no. 3, 1965, 1-9

24

TOPIC TAGS: stochastic process, acoustic wave, shell theory, random oscillation, Galerkin method, density distribution, stress load

ABSTRACT: The nonlinear oscillations and stability of cylindrical shells under the action of acoustic loads were studied analytically. The acoustic load is represented as "with noise." The shell is in the form of a circular cylindrical panel of length a and width b, hinged at one end. A uniform compressive force p is assumed to act on the curvilinear surface. Using the Bubnov-Galerkin or the Ritz method, the following equation of motion is obtained

$$\frac{d^2}{dt^2} + 2\zeta \frac{d}{dt} + \omega_0^2 \left(1 - \frac{p^*}{p_*}\right) (\alpha \ddot{\psi} - \beta \dot{\psi}^2 + \gamma \psi^3) - \zeta \omega_0 \frac{p^*}{p_*} = q^*(t),$$

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ACCESSION NR: AP5011584

If it is assumed that  $q^*(t)$  can be represented by a "white noise" of zero mean value and spectral density  $S_0$ , the following Fokker-Planck-Kolmogorov equation is obtained for the coordinate probability and the velocity  $\zeta = d\zeta/dt$

$$\begin{aligned} \frac{\partial f(\zeta, \dot{\zeta})}{\partial t} = & 2\zeta \frac{\partial f(\zeta, \dot{\zeta})}{\partial \dot{\zeta}} + \left[ 2\zeta \dot{\zeta} + \omega_0^2 \left( 1 - \frac{P^*}{P_0} \right) (\alpha_0^* - \beta \zeta^* + \eta \dot{\zeta}^*) - \right. \\ & \left. - \zeta_0 \omega_0^2 \frac{P^*}{P_0} \right] \frac{\partial f(\zeta, \dot{\zeta})}{\partial \zeta} + \pi S_0 \frac{\partial^2 f(\zeta, \dot{\zeta})}{\partial \dot{\zeta}^2}. \end{aligned}$$

This leads to the two expressions for the probability densities

$$f(\zeta) = \frac{1}{C} \exp \left[ -\frac{1}{S_0^*} \left( 1 - \frac{P^*}{P_0} \right) \left( \alpha_0^* \zeta^* - \frac{2}{3} \beta \zeta^* + \frac{\eta}{2} \dot{\zeta}^* \right) + \frac{2}{S_0^* P_0} \zeta_0 \zeta \right]$$

$$f(\dot{\zeta}) = \frac{1}{\omega_0 \sqrt{\pi S_0}} \exp \left( -\frac{1}{S_0^* \omega_0^2} \dot{\zeta}^2 \right).$$

For the special case of curvature  $k = 24$ , the critical load  $P_B^* = 18$ , and a

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L 52290-65

ACCESSION NR: 4P5011584

0

numerical solution of the probability density equations gives a bi-modal distribution for  $f(\zeta)$ . To obtain the probability characteristics of the dynamic deflection magnitudes, the concept of mean relative cross section is utilized, and the following equation is obtained for the probability density of extrema

$$f(\zeta_{\max}) = \pm \frac{2(S_e^2 C)^{-1} \left(1 - \frac{\rho^*}{\rho_e}\right)}{f(\zeta_1) - f(\zeta_2) + f(\zeta_3)} (\zeta - \beta\zeta^3 + \eta\zeta^4) \times \\ \times \exp \left[ -\frac{1}{S_e^2} \left(1 - \frac{\rho^*}{\rho_e}\right) \left(\zeta^2 - \frac{2}{3} \beta\zeta^3 + \frac{\eta}{2} \zeta^4\right) \right].$$

Numerical examples are given for various special cases. Finally, an expression is obtained for the mean number of direct and inverse undulating motions

$$\frac{N}{\omega_0} = \sqrt{\frac{S_e^2}{\pi}} / f(\zeta_0).$$

Orig. art. has: 24 equations, 8 figures, and 1 table.

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L 52290-65

ACCESSION NR: AP5011584

ASSOCIATION: Moskovskiy aviaatsionnyy institut (Moscow Aviation Institute)

SUBMITTED: 2 Nov 64

ENCL: 00

SUB CODE: AB

NO REF Sov: 010

OTHER: 003

gch  
Card 4/4

L 16518-66 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EPF(n)-2/EWP(v)/EWP(k)/EWA(h)/ETC(m)-6  
 ACC NR: AP60(2630 IJP(c) (N) SOURCE CODE: UR/0258/65/005/006/1127/1130  
 Wh/EM

AUTHORS: Vol'mir, A. S. (Moscow); Gershteyn, M. S. (Moscow)

77

ORG: none

B

TITLE: The behavior of elastic cylindrical shells under the action of a planar acoustic wave.

24,55

SOURCE: Inzhenernyy zhurnal, v. 5, no. 6, 1965, 1127-1130

TOPIC TAGS: acoustic wave, shock wave, shell, shell deformation, circular cylindrical shell, transient response

ABSTRACT: An investigation is made of the behavior of a circular cylindrical shell of infinite length under the action of a planar acoustic wave. The shell (see Fig. 1) is immersed in a fluid and has a wall thickness  $h$  and radius  $R$ . The equation of motion of the annular shell is given as

$$\frac{1}{R} \frac{\partial M}{\partial y} - \frac{\partial N}{\partial y} - p_y h \frac{\partial^2 v}{\partial r^2} = 0,$$

$$\frac{\partial^2 M}{\partial y^2} + \frac{N}{R} + \frac{\partial}{\partial y} \left( N \frac{\partial w}{\partial y} \right) - p + p_y h \frac{\partial^2 w}{\partial r^2} = 0,$$

Card 1/4

UDC: 533.601,342

L 16518-66  
ACC NR: AP6002630

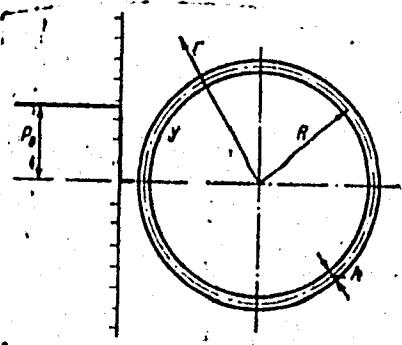


Fig. 1.

where  $y$  is an arc distance coordinate,  $v$  and  $w$  are deflections of the median surface along an arc and in the radial direction,  $\rho_2$  is the density of the shell

material, and  $p$  is fluid pressure on the shell. Shear moment  $M$  and normal force  $N$  in a segment of the shell are expressed in terms of strains. This results in the system

$$\left(1 + \frac{h^3}{12R^3}\right) \frac{\partial^4 v}{\partial y^4} + \frac{h^3}{12R} \frac{\partial^3 (w - w_0)}{\partial y^3} - \frac{1}{R} \frac{\partial (w - w_0)}{\partial y} +$$

$$+ \frac{\partial w}{\partial y} \frac{\partial^2 w}{\partial y^2} - \frac{\partial w_0}{\partial y} \frac{\partial^2 w_0}{\partial y^2} - p_2 \frac{1 - \mu^2}{E} \frac{\partial^4 v}{\partial t^4} = 0,$$

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L 16518-66

ACC NR: AP6002630

$$\begin{aligned} \frac{h^3}{12R} \frac{\partial^3 v}{\partial y^3} - \frac{1}{R} \frac{\partial v}{\partial y} + \frac{h^3}{12} \frac{\partial^3 (w - w_0)}{\partial y^3} + \frac{w - w_0}{R^2} - \frac{1}{2E} \left[ \left( \frac{\partial w}{\partial y} \right)^2 - \left( \frac{\partial w_0}{\partial y} \right)^2 \right] - \\ - \frac{\partial w}{\partial y} \left[ \frac{\partial^3 v}{\partial y^3} - \frac{1}{R} \frac{\partial (w - w_0)}{\partial y} + \frac{\partial w}{\partial y} \frac{\partial^3 w}{\partial y^3} - \frac{\partial w_0}{\partial y} \frac{\partial^3 w_0}{\partial y^3} \right] - \\ - \frac{\partial^3 w}{\partial y^3} \left[ \frac{\partial v}{\partial y} - \frac{w - w_0}{R} + \frac{1}{2} \left( \frac{\partial w}{\partial y} \right)^2 - \frac{1}{2} \left( \frac{\partial w_0}{\partial y} \right)^2 \right] - p \frac{1 - \mu^2}{Eh} + p_1 \frac{1 - \mu^2}{E} \frac{\partial^3 w}{\partial t^3} = 0, \end{aligned}$$

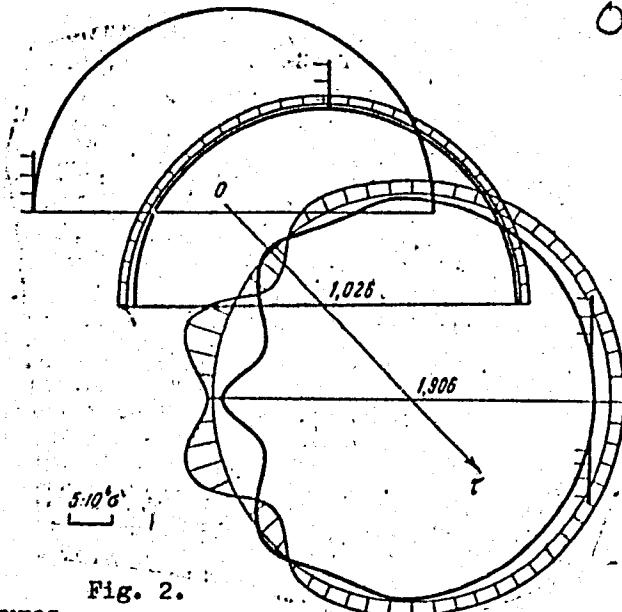
where E and  $\mu$  are the modulus of elasticity and Poisson's coefficient for the shell material. The problem is simplified by means of the relationship

$$p = \frac{\rho_1 c^2}{R} \left( \frac{w - w_0}{2} - \frac{R}{c} \frac{\partial w}{\partial t} \right) - p_1 \left[ \frac{\partial \phi}{\partial t} + c \frac{\partial \phi}{\partial r} - \frac{c^2}{2} \int \frac{\partial \phi}{\partial r} dt_1 \right]_{r=R}$$

developed by E. I. Grigolyuk and V. L. Prisekin (Dinamicheskoye vzaimodeystviye ortotropnoy tsilindricheskoy obolochki s akusticheskoy udarnoy volnoy. Izv. AN SSSR, Mekhanika i mashinostroyeniye, No. 6, 1963). The coordinate  $r$  is the polar system radius vector;  $\phi$  is the velocity potential of the incipient wave. These equations were converted to dimensionless form, written as finite difference equations, and solved on an electronic digital computer. Distortions occurring in the shell are discussed and plotted as shown, for example, in Fig. 2.

Card 3/4

L 16518-66  
ACC NR: AP6002630



Orig. art. has: 8 equations and 4 figures.

SUB CODE: 20 ~~15~~ SUBM DATE: 15Jun65/ ORIG REF: 002/ OTH REF: 002

Card 4/4 TS

L 05844-67 EVT(I)/EVT(II)/EWP(W)/EWP(V)/EWP(K) IJP(C) WW/EM

ACC NR: AP6028214

SOURCE CODE: UR/0430/66/019/001/0008/0012

AUTHOR: Vol'mir, A. S.; Gershelyn, M. S. — Herschtein, M. S.

ORG: Military Air Engineering Academy im. Prof. N. Ye. Zhukovskiy (Voyenno-vozdushnaya inzhenernaya akademiya)

TITLE: On the behavior of blood vessels as elastic shells

SOURCE: AN ArmSSR. Izvestiya. Mekhanika, v. 19, no. 1, 1966, 8-12

TOPIC TAGS: blood pressure, finite difference, shell theory, nonlinear elasticity

ABSTRACT: The authors consider the behavior of blood vessels considered as shells with nonlinear elasticity during rapid hemodynamic processes. The study is based on the use of dynamic equations for shells with considerable radial displacement. Blood motion is considered as a laminar flow of Newtonian liquid. Numerical results are given for a number of examples using the method of finite differences with a digital computer. The resultant pressure curves may be used for evaluating the effect of blood vessel rigidity on localized pressure increase during arterial embolism. The proposed method may be used for studying hemodynamic phenomena both under ordinary conditions and under high acceleration. Orig. art. has: 4 figures, 8 formulas.

SUB CODE: 06, 20/ SUBM DATE: 19Jul65/ ORIG REF: 004

Card 1/1 egh

SOLOV'YEV, Aleksandr Ivanovich; KOVALENOK, Yevgeniy Vikent'yevich;  
VERZIN, Ivan Andreyevich; KOVALEV, Nikolay Aleksandrovich;  
VOL'MIR, R.I., red.

[Designs of mechanisms for automatic control devices, measuring and computing equipment] Рисунки механизмов автоматики, измерительной и счетно-решающей техники. — Под ред. А.И. Соловьева. Таганрог, Таганрогский радиотехнический институт, 1961. 215 п.  
(MIRA 16:3)

(Automatic control) (Measuring instruments)  
(Calculating machines)

VOL'MIR, V.

LEVIN, G.; VOL'MIR, V.

Investigating the thermal and physical properties of porous  
polystyrene [with summary in English]. Khol. tekhn. 35 no.1:47-52  
Ja-F '58. (MIRA 11:2)

(Styrene--Testing)

AUTHORS: Levin, G.M., Vol'mir, V.I. SOV/115-58-6-26/43

TITLE: Characteristic Curves of Thermal Inertia of Standard Thermo-couples and Resistance Thermometers (Kharakteristicheskiye krivyye teplovoy inertsii standartnykh termoper i termometrov soprotivleniya)

PERIODICAL: Izmeritel'naya tekhnika, 1958, Nr 6, pp 61-64 (USSR)

ABSTRACT: The heat inertia of thermocouples and resistance thermometers depends on the coefficient of heat emission (Kcal/sq m · h · degree). This dependence is shown in Reference 1 and Figures 1, 3, and 4. A good contact between the heat-sensitive element and the cover is regarded as the best means for reducing the thermal inertia. There is, however, a considerable influence of the size, form, position, etc. of the different parts of a thermocouple on its inertia. The different characteristics of the low-inertia thermocouples of type TKhK-UKhV, TKhA-UKhV, and of the resistance thermometer ETP-KhKhII are given in Table 2. These instruments have a low inertia in those cases where the heat emission is high. At lower values of heat emission their inertia is even higher than in the usual thermocouples. The data for the standard thermocouple TKhA-KhIII (TP-2), for the same instrument with

Card 1/2

SCV/115-58-6-26/43

Characteristic Curves of Thermal Inertia of Standard Thermocouples and Resistance Thermometers

a foil between the element and the cover TP-2 (f) and for thermocouples filled with alcohol TP-2 (s) is given in Figure 3. At temperatures of 600-700° C the inertia is lower than at room temperature (Table 3). There are 4 graphs, 3 tables and 5 Soviet references.

Card 2/2

S/115/60/000/04/016/041  
D002/D006

AUTHOR: Levin, G.M., Vol'mir, V.I.

TITLE: On Methods of Investigating the Thermal Inertia of  
Thermo-Couples and Resistance Thermometers

PERIODICAL: Izmeritel'naya tekhnika, 1960, Nr 4, pp 27-30 (USSR)

ABSTRACT: The authors point out that the methods given in the  
standards for thermo-couples ("GOST" 6616-53) and re-  
sistance thermometers ("GOST" 6651-53) are inade-  
quate, because the thermal inertia obtained can on-  
ly be used for evaluating the quality of the de-  
vices' assembly, and is not a reliable characteristic  
of their exploitation /Ref. 17/. These methods are  
based on a false conception of the onset of the re-  
gular heat at the moment when the device's heat re-  
ceiver is placed into the thermostatic medium. They

Card 1/2

S/115/60/000/04/016/041  
D002/D006

On Methods of Investigating the Thermal Inertia of Thermo-Couples  
and Resistance Thermometers

do not take into account the dependence of the inertia on heat exchange conditions, and only cover investigations at high heat-release coefficients. The method which eliminates these deficiencies is the improved and supplemented universal method of regular heat /Ref. 2, G.M. Kondrat'yev/, giving reliable thermal inertia criteria and characteristic lagging curves. Detailed information on it is given by means of an example: the thermal inertia of P.G. Strelkov reference resistance thermometer (the "TS-0") is compared to the inertia of a copper-constantan thermo-couple ("TP-0"), both devices being placed in quartz hoods 5 mm in diameter. There are 1 diagram, 4 graphs, 4 tables, and 7 Soviet references.

(V)

Card 2/2

LEVIN, G.M.; VOL'MIR, V.I.

Characteristic curves of thermal inertia of standard thermo-couples and resistance thermometers. Izm.tekh. no.6:61-64 N-D  
'58. (MIRA 11:12)

(Heat--Radiation and absorption) (Thermometers)  
(Thermocouples)

LEVIN, G.M.; VOL'MIR, V.I.

Thermal inertia of thermoelements in some temperature measuring  
instruments. Izm.tekh.no.5:54-56 S-0 '56. (MLRA 10:2)  
(Heat--Radiation and absorption) (Thermometers)

LEVIN, G.M.; VOL'MIR, V.I.

Methods of thermal-inertia tests for thermocouples and  
resistance thermometers. Izm.tekh. no.4:27-30  
Ap. '60. (MIRA 13:8)  
(Heat--Radiation and absorption)  
(Thermocouples) (Thermometers)

VOL'NII R. U.I.

• 24(0); 5(4); 6(2) PHASE I BOOK EXPLOITATION 507/2215  
 Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni  
 D.I. Mendeleyeva

Referaty nauchno-issledovaniy i issledovaniy No. 2 (Scientific Research Abstracts; Collection of Articles, Nr. 2) Moscow,  
 Standartizatsiya, 1958. 139 p. 1,000 copies printed.

Additional Sponsoring Agency: USSR. Komitet standartov, ser. 1  
 Izmeritel'naya priborov.

Ed.: S. V. Rezhinina; Tech. Ed.: M. A. Kondrat'yeva.

PURPOSE: These reports are intended for scientists, researchers, and engineers engaged in developing standards, measures, and gauges for the various industries.

COVERAGE: The volume contains 128 reports on standards of measurement and control. The reports were prepared by scientists of the Institutes of the Komitet standartov (ser. 1 Izmeritel'naya priborov pri Sovete Ministrów SSSR (Commission on Standards, Measures, and Measuring Instruments under the USSR Council of Ministers). The participating institutes are: VNIK - Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni D.I. Mendeleyeva (All-Union Scientific Research Institute of Metrology); NIIIMI (All-Union Scientific Research Institute of Metrology, Izmeritel'naya priborov imeni D.I. Mendeleyeva); Sverdlovsk branch of this institute; VNIIK - Vsesoyuznyy nauchno-issledovatel'skiy institut kometika standartov, ser. 1 Izmeritel'naya priborov (Institute of Precision Engineering Standards and Measuring Instruments of the Commission (All-Union Scientific Research Institute of the Commission on Standards, Measures, and Measuring Instruments), created from MOIIMP); Rukovodlyy Gouzorivyye institut ser. 1 izmeritel'naya priborov (Moscow State Institute of Measures and Measuring Instruments); October 1, 1955); VNIIMI - Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tehnicheskikh issledovanii (All-Union Scientific Research Institute of Physical and Radio-Engineering Research); Institut prirodoznanija i radioelektroniki imeni V.A. Zvezdochkin (Institute of Physics and Radio-Engineering Measurements) in Moscow; MOIIMP; Nar'kovoyskij gosudarstvennyy institut ser. 1 Izmeritel'naya priborov (Nar'kovoysk State Institute of Measures and Measuring Instruments); and NIIOPD - Novosibirskii gosudarstvennyy institut ser. 1 Izmeritel'naya priborov (Novosibirsk State Institute of Measures and Measuring Instruments). No personalities are mentioned. There are no references.

Mandryka, V.V., V.Ye. Pankov, Shtern, A.Z. Chetvertik, and L.A. Ruzanovskiy (MOIIMP). Measuring the Free Condensation Temperature of Basic Industrial Fuels 86  
 Levin, G.M., A.N. Semenov, and V.I. Volkov (Sverdlovsk Branch of VNIIK). Studying Characteristics of Thermal Insulation in Thermal Sensors Devices 87  
 Gomel'skiy, K.Z. (Sverdlovsk Branch of VNIIK). Determining Thermal Capacity of Solids at High Temperatures 87  
 Levin, G.M., and E.M. Mal'kova (Sverdlovsk Branch of VNIIK). Studying Methods for Determining Thermal Characteristics of Materials on the Basis of the Theory of Regular Thermal Conditions 89  
 Toselev, G.L., and P.S. Patrin. (MOIIMP). Developing and Creating an Automatic Thermogauge for Checking Standard thermometers with Values of Division 0.1°C or Less 90

card 18/27

KESTNEROVA, V.; VOLNA, F.

Determination of mutual relations between chemical activity and the  
biological effectiveness of chlorine preparations (Preliminary report).  
Cesk. epidem. 11 no.5:325-330 S '62.

1. Ustav epidemiologie a mikrobiologie v Bratislave.  
(CHLORAMINES) (CHLORINE) (ANTISEPTICS HALOGEN)

WUNDER, R. MUDr.; VOLNA, A.; HUDAČ, A., prom. lek.; DEDEK, J., doc. dr.

Analysis of malignant neoplasms in autopsied cases in the  
Czechoslovakian SSR. Ces. zdrav. 12 no.10:501-509 O '64.

1. Katedra organizacie zdravotnictva Lekarskej fakulty  
University Komenskeho v Bratislave.

VOLNA, G.; SNOBL, O.

Unusual traumatic bone changes in young infants. Acta univ. carol.  
[Med] no.2:238-243 '61.

1. II detska klinika fakulty detskeho lekarstvi University Karlovy,  
prednosta prof. MUDr. J. Houstek.

(FRACTURES in inf & child)

BRACHFELDOVA, J.; SVEJCAR, Jiri; VOLNA, O.

Alimentary methemoglobinemia. Cesk. pediat. 8 no.6:481-487 5 July  
58.

1. II. detska klinika, prednosta prof. Dr. J. Houstek.  
(METHEMOGLOBINEMIA, in inf. & child  
(Cz))

MASOPUST, J.; VOLNA, G.

Changes of gamma globulin in childhood. II. Hypogammaglobulinemia  
in eczema in children. Cesk.pediat. 15 no.4:289-295 Ap.'60.

1. Ustav vyzkumu vyvoje dítěte fakulty dětského lékařství KU a  
II. dětská klinika v Praze, prednosta prof. dr. J. Houšek.  
(AGAMMAGLOBULINEMIA in inf.& child.)  
(ECZEMA in inf.& child.)

VOLNA, G.; TOSOVSKY, V.

Biliary peritonitis in infants. Cesk. pediat. 13 no.8:737-740 5 Sept  
58.

1. II. detske klinika KU v Praze, prednosta prof. MUDr. J. Hostek  
Klinika pro detskou chirurgii KU, prednosta doc. MUDr. V. Kafka, G.V.,  
Praha II, Sokolska 2.

(PERITONITIS, in inf. & child

biliary peritonitis in newborn caused by gallbladder perf.,  
surg. (Cz))

(GALLBLADDER, perf.

causing biliary peritonitis in newborn, surg. (Cz))

(INFANT, NEWBORN, dis.

biliary peritonitis caused by gallbladder perf. surg. (Cz))

EXCERPTA MEDICA Sec. 7 Vol. 9/8 Aug 55

Volná, G.

12. SKIN, TEETH, HAIR, NAILS

1609. VOLNÁ G., II. dět. Klin., Praha. \* Výskyt a průběh kojeneckého ekzému.  
Occurrence and course of infant eczema PRAKT. LÉK. 1954,  
34/15-16 (356-358) Graphs 1

On the basis of the material collected during 6 yr. the author evaluates statistically the occurrence and course of infant eczema. He states that the aetiology and pathogenesis up to now are not quite clear. A general treatment with special regard to the varied reactions of the skin according to the type of nervous system is emphasized. A case of hypersensitivity to human milk and 2 cases of infection with *Pseudomonas aeruginosa* are dealt with in detail. The great susceptibility of children with eczema to infectious diseases is emphasized and also the necessity of isolation in hospital wards. Möhwaldová - Ostrava-Zábřeh (VII, 13)

Volyn, B.

EXCERPTA MEDICA Sec.13 Vol.9/11 Dermatology Nov 55

256. VOLNA G. H. d.d. Klin., Praha. "Vyskyt a průběh kojeneckého ekzema. [Occurrence and course of infant eczema]" PRAK. LÉK. 1954, 34, 15-16 (356-358) Graphs 1

On the basis of the material collected during 6 yr, the author evaluates statistically the occurrence and course of infant eczema. He states that the aetiology and pathogenesis up to now are not quite clear. A general treatment with special regard to the varied reactions of the skin according to the type of nervous system is emphasized. A case of hypersensitivity to human milk and 2 cases of infection with *Pseudomonas aeruginosa* are dealt with in detail. The great susceptibility of children with eczema to infectious diseases is emphasized and also the necessity of isolation in hospital wards. Mohwaldová - Ostrava-Zabreh (VII, 13)

VOLNA, G.

VOLNA, G., MUDr

Appearance and course of infantile eczema. Prakt. lek., Praha 34  
no. 15-16:356-358 5 Aug 54.

1. II det. klinika prof. Dr. J. Brdlika - Praha  
(ECZEMA, in infant and child  
\*course of disease)

VOLNA, Grazyna., MUDr.

Cystinosis (Lignac - Fanconi disease).  
Cesk. pediat. 11 no.1; 46-51 Feb. 56

1. II. detska klinika, predn. prof. Dr. Houstek, Praha  
(METABOLIC DISEASES, in inf. and child  
cystinosis, diag.)

VOLNA, M. ; KRIZ, V.

Effect of the various densities of oak seedlings growing in groups on micro-climatic ~~emisit~~  
conditions. p. 19.

No. 1, 1955  
SBORNÍK RADA C: SPISY FAKULTY LESNICKÉ  
Brno, Czechoslovakia

So: Eastern European Accession Vol. 5 No. 4 April 1956

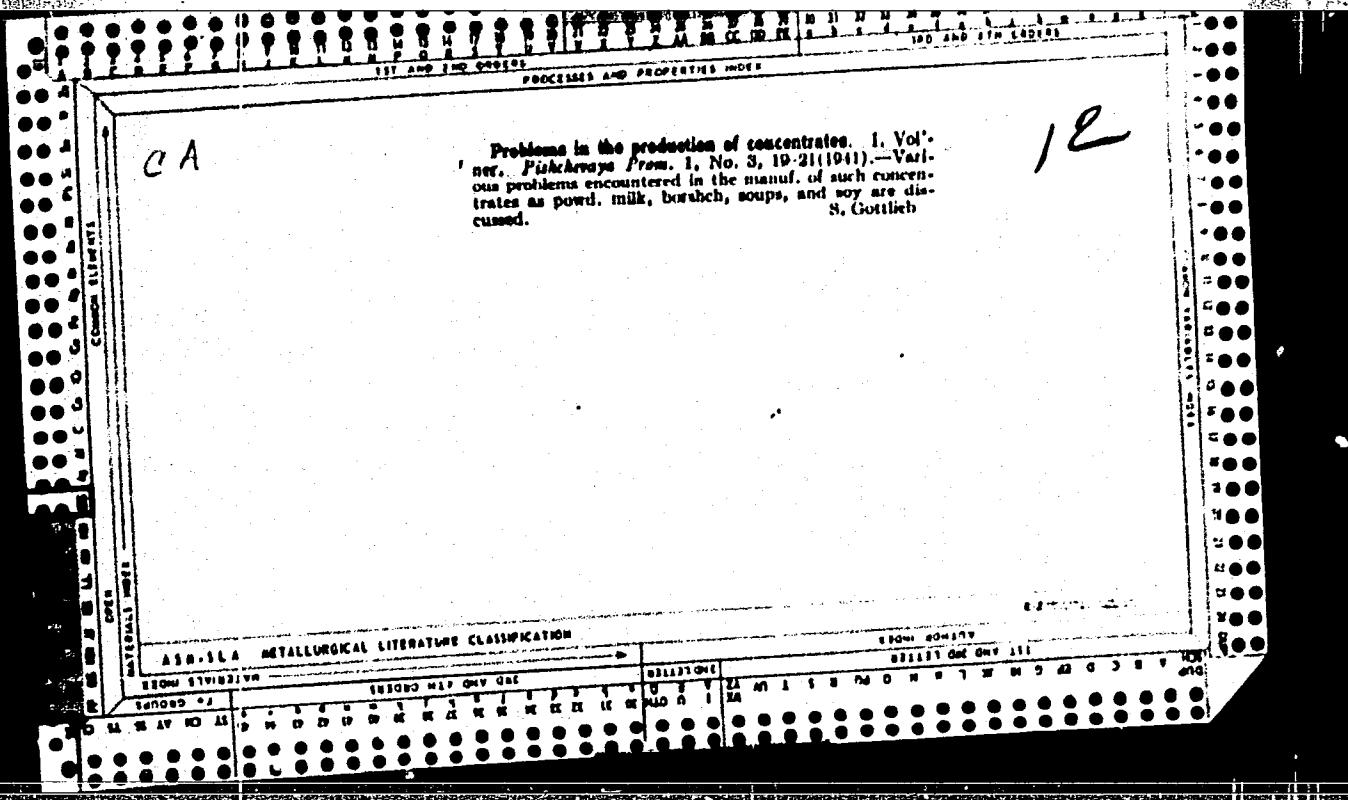
VOLNA, MILADA.

Cviceni zi zalesnovani. (Vyd. 1)

Praha, Czechoslovakia, Statni pedagogicke nakl., 1959, 4lp.

Monthly List of East European Accessions (EMAI), LC, Vol. 8, No. 9, September 1959.

Unclassified.



VOLNA, Grazyra; VAVROVA, Vera

Relation of asthmatic bronchitis in children under 2 years of  
age to the appearance of asthma. Cesk.pediat.15 no.6/7:614-616  
J1'60.

1. II. detska klinika KU v Praze, prednosta prof.MUDr. J.Houstek.  
(ASTHMA in inf & child)  
(BRONCHITIS in inf & child)

VOLNA, Grazyna

Asthma and cutaneous manifestations. Cesk.pediat.15 no.6/7:  
636-638 J1'60.

1. II. detaka klinika MU v Praze, prednosta prof.MUDr. J.Houstek.  
(ASTHMA in inf & child)  
(SKIN dis)

HOUSTEK, J.; VOLNA, G.

Hypercalcemia in children. Cesk.pediat.15 no.11:961-967 H'60.

1. II. detska klinika v Praze, prednosta prof.dr. J.Housteck.

(CALCIUM blood)

(SARCOMA blood)

VOLNENKO, A.N.

VOLNENKO, A.N. architektor.

Rack for hanging drawings. Rats. i izobr. predl. v stroi. no.  
(MLRA 9:9)  
134:20-22 '56.

(Architecture--Designs and plans)

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001860620016-1

DULETOVA, T.A.; ASTANKOVA, N.S.; VOLMENKO, N.K.; KULAGIN, Yu.V.; SOKOLOVA, M.F.

Synoptic aerological conditions of the formation of fogs according to  
the data of Kazakhstan. Trudy KazNIGMI no.11:103-121 '59.  
(MIRA 13:6)

(Kazakhstan--Fog)

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R001860620016-1"

L 00487-66 EWT(1)/EWT(m)/EPF(n)-2/E.G(m)/EPA(w)-2/EXP(t)/EMP(b) IJP(c) JD/JG/LT

ACCESSION NR: AP5020566 UR/0294/65/003/004/0627/0631

66,065

AUTHOR: Donskoy, A. V.; Dresvin, S. V.; Voronin, K. K.; Vol'nets, F. K.

YYSS

YYSS

YYSS

TITLE: Some special characteristics of processes for growing high melting  
crystals in high frequency plasma burners

YYSS

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 4, 1965, 627-631

59  
56

TOPIC TAGS: plasma burner, crystal, plasma physics, argon

B

ABSTRACT: The article advances construction details of a high frequency burner which assures long term operation at sufficiently high values of the discharge power. The simplest type of induction plasma burner consists of an inductive discharge without electrodes in a quartz tube. By blowing gas through the tube, a plasma flame is formed at the end of the tube which resembles an ordinary chemical flame. Feed source for the burner is a lamp generator with a power of 5-30 kilowatts and a frequency of 1-60 megacycles. If no measures were taken for heat shielding the quartz walls of the tube against the high temperatures of the

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ACCESSION NR: AP5020566

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plasma (9000-10,500 K), the walls would melt within 20-30 sec. Three shielding methods are outlined: 1) burner with forced gas cooling of the tube, 2) burner with water cooling, and 3) burner with cooling coils. To obtain crystals of high melting materials in a high frequency plasma burner with a metal water cooled chamber, the standard powder for a gas flame burner was used. Crystal growth was 13-15 mm/hour. A long focus lens was used for observation of the crystal growth. Addition of a small percent of air in the argon fed to the burner improves the heat characteristics of the burner. Orig. art. has: 3 figures

ASSOCIATION: Leningradskiy politekhnicheskiy institut im. M. I. Kalinina  
(Leningrad Polytechnic Institute)

SUBMITTED: 25Jun64

ENCL: 00

SUB CODE: SS, MS

NR REF SOV: 002

OTHER: 003

*fw*  
Card 2/2

L 22081-66 EWT(m)/EWA(d)/T JW

ACC NR: AP6012661

SOURCE CODE: UR/0069/65/027/003/0388/0395

AUTHOR: Komarov, V. S.; Yermolenko, N. F.; Ermolenko, N. F.; Volneyko, I. N.; Volneiko, I. N.

+6

44

B

ORG: Institute of General and Inorganic Chemistry, AN BSSR, Minsk (Institut obshchey i neorganicheskoy khimii AN BSSR)

TITLE: Drying of air by clay adsorbents

SOURCE: Kolloidnyy zhurnal, v. 27, no. 3, 1965, 388-395

TOPIC TAGS: adsorption, surface tension, vapor pressure, temperature dependence, sorption, aluminum silicate

ABSTRACT: The results of the studies show that the best adsorption properties are exhibited by clay-hydroxide and iron aluminosilicate adsorbents activated at 120 - 200°. There is no great difference between the dynamic activities of samples activated at 120 and 200°. If the activation temperature is increased from 200 to 600°, the activity decreases somewhat. The decrease in dynamic activity of baked clay-hydroxide adsorbents is due principally to change in structure which is accompanied by an increase in the mean pore radius from 25 to 45 Å. For porous adsorbents, where adsorption and condensation occur simultaneously, the sorption potential is determined, on the one hand, by the specific surface, and, on the other, by the radius and volume of the pores. As the pore radius increases at constant specific surface, the adsorption potential decreases. The adsorption capacity and the protection time of the

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UDC: 541.183: 542.47

L 22081-66

ACC NR: AP6012651

adsorbents depend greatly on the humidity of the air being dried, and, to a considerable extent, on the structure of the sorbent and the distribution of the pore volumes in radii. The adsorption capacity and the protective time vary oppositely with increase in humidity, but this is only strictly true of adsorbents having a mixed pore structure. For such adsorbents, each successive increase in volume of sorbed moisture, corresponding to a definite value of  $\Delta r$ , is always less than the preceding volume for the same value of  $\Delta r$ , i.e., for each new increase in humidity, in spite of the fact that the total absorption is increasing, the increase in sorption volume decreases. On the other hand, for adsorbents with pores of uniform size, the increase in the sorption volume first increases with increase in air humidity, and reaches a maximum value at a humidity which produces filling of the pores, the dimensions of which correspond to the maximum on the distribution curve. Here, the increase in sorption volume ( $\Delta V$ ), may, for a small increase in humidity of the gas, exceed the preceding value of  $\Delta V$  by several fold, so that the protection time of the adsorbent is increased. Practical use of adsorbents with pores of one size for complete drying is most satisfactory at a humidity of the gas such that during a dynamic experiment, capillary condensation embraces the pores lying in the region of the maximum of the distribution of volumes in radii. The protective action and the dynamic activity decrease appreciably as the temperature is increased. The effect of temperature is equivalent, on the

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ACC NR: AP6012661

one hand, to reducing the relative vapor pressure, or eliminating the larger pores, and, on the other hand, increasing the temperature increases the thermal motion of the molecules, which prevents orientation of the molecules, and keeps them from being held back in the force field of the adsorbent. Increasing the temperature also decreases the surface tension which straightens out the meniscus, increases the vapor pressure over the liquid surface in the capillary, and decreases the force of attraction of the molecules of vapor to the liquid surface having smaller curvature of the meniscus. All this evidently affects the rate of sorption of moisture, and particularly the capillary condensation rate. The moisture capacity of the adsorbent is greater for small sized granules and decreases as they become larger, due to diffusion hindrances of the molecules of moisture inside the adsorbent grains. The grain size of the adsorbent, while affecting the kinetics of the sorption process, has no effect on the degree of drying of the gas. The degree of drying of the gas appears to be a specific property of the adsorbent, and depends principally on the magnitude and chemical nature of the specific surface, the physical structure, the pore size, and the height of the adsorbent layer, as well as on the affinity of the adsorbate molecules for the surface, and the velocity of the gas stream. The adsorbent was regenerated for 1.5 hours at a temperature of 200°, after which it

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L 22081-66

ACC NR: AP6012661

was again tested. The data show that the sorption activity of an iron aluminosilicate adsorbent remains practically unchanged even after the eighth regeneration. Nor is there any mechanical destruction of the adsorbent grains. Orig. art. has: 7 figures and 4 tables. [JPRS]

SUB CODE: 07, 20 / SUBM DATE: 26Dec63 / ORIG REF: 017 / OTH REF: 003

Card 4/4 BLG

KOMAROV, V. S.; YERMOLENKO, N. F., akademik; VARLAMOV, V. I.;  
VOLNEYKO, I. M.

Highly active ferroaluminosilicate contact catalyst for  
thermal desulfurization of petroleum products. Dokl. AN SSSR  
147 no.6:1413-1416 D '62. (MIRA 16:1)

1. Institut obshchey i neorganicheskoy khimii AN Belorusskoy  
SSR. 2. AN Belorusskoy SSR (for Yermolenko).

(Petroleum products) (Desulfuration)  
(Catalysts)

SKOROKHOI, O.R.; TISHCHENKO, I.G.; VOLNEYKO, I.N.

Photometric determination of titanium with 2-(*N*-piperidino)  
isopropyl-4-hydroxytetrahydrofuran-3-ons. Zhur. anal. khim. 16  
no. 4:426-429 Jl-Ag '61. (MIRA 14:7)

I. V.I. Lenin Byelorussian State University, Minsk.  
(Titanium—Analysis)

KOMAROV, V.S.; YERMOLENKO, N.F.; VOLNEYKO, I.N.

Drying of air by clay adsorbents. Koll.zhur. 27 no.3:388-395  
My-Je '65. (MIRA 18:12)

1. Institut obshchey i neorganicheskoy khimii AN BSSR, Minsk.  
Submitted Dec. 26, 1963.

NAGY, Zoltan, dr.; NAGY, Erno, dr.; VOLNI, Gyorgy, dr.

Functional x-ray examination of the rupture of periarticular  
ligaments. Magy. radiol. 15 no.2:78-81 Ap '63.

1. Az Orszagos Traumatologial Intezet kozlemenye. (Igazgato: Szanto  
Gyorgy dr., egyetemi tanar).  
(LIGAMENTS) (ELBOW) (KNEE) (ANKLE) (RADIOGRAPHY)

VOLNI, Gyula, dr.

Continuous and illustrative representation of statistical  
data at pediatric wards. *Nepgeszsegugy* 38 no.1-2:54 Jan-Feb  
57.

1. Koslemeny a Bacs-Kiskun megyei tanacs korhaza, Kecskemet  
(igazgato: Zsiska, Mihaly, dr.) gyermekosztalyarol (foorvos:  
Volni, Gyula, dr.).

(VITAL STATISTICS

mortality, continuous illustrative recording  
method for pediatric wards (Hun))

HUNGARY

NAGY, Zoltan, Dr, NAGY, Erno, Dr, VOLNI, Gyorgy, Dr; National Institute of Traumatology (Orszagos Traumatologial Intezet) (Director: SZANTO, Gyorgy, Dr, professor).

"Functional X-Ray Examination of the Rupture of Periarticular Ligaments."

Budapest, Magyar Radiologia, Vol XV, No 2, Apr 63, pages 78-81.

Abstract: [Authors' English summary] A method is described for the X-ray demonstration of clinically suspected ruptures of the ligaments. The greater distension of the articular cleft is a certain sign of ligaments rupture. Comparative rontgenogram from the intact side was made by the authors. Previous anaesthesia of short duration was very useful. 1 Hungarian, 15 Western references.

1/1

VOLNI, G.; KUHN, E.

Radiological diagnosis of tracheal diverticulum, Magy. radiol. 5 no.4:  
154-157 Nov 1953. (GIML 25:5)

1. Doctors. 2. Roentgen Department (Head Physician -- Dr. Erno Koppenstein, Candidate Medical Sciences), Uzsoki-utca Metropolitan Hospital (Director -- Dr. Karoly Parkas, Candidate Medical Sciences).

VOINI, Gyorgy, dr.

A study-trip to Holland. Magy radiol 12 no.1:46-51 Mr '60.  
(RADIOLOGY)

VOLNI, Gyula, dr.

Dipacrin tablets therapy of Leiner's disease. Gyermekgyógyászat 6  
no.5:160 May 55

1. Kecskemeti Megyei Korhaz Gyermekosztályának (igazgató: Dr. Zsiska  
Mihály, főorvos: Dr. Volni Gyula) kozleménye.  
(ERYTRODEMA DESQUAMATIVUM, in infant and child,  
ther., dipacrin)

CSAKANY, Gyorgy, dr.; VITTAJ, Pal, dr.; VOLNI, Gyorgy, dr.; BARSY, Gyula, dr.

Therapeutic radiation injury in the population of Budapest.  
Orv.hetil. 101 no.46:1632-1634 13 N'60.

1. Orszagos Rontgen- es Sugorfizikai Intezet.  
(RADIOTHERAPY compl)

Volni Gy.

Excerpta Medica 2/7 sec 16 July 54 Cancer

3268. VOLNI Gy. Fovárosi Uzsoki Utcai Kórház, Budapest. Primaer duodenalis carcinoma három esete *Three cases of primary duodenal cancer* Mag. radiol. 1953, 5/3 (111-114) Illus. 3

In the 1st case, a male aged 61, a filling defect was detected in the lower horizontal part of the duodenum. At operation an inoperable adenocarcinoma with regional metastases was found. The 2nd patient, a 46-yr.-old male, suffered from recurring jaundice. Autopsy revealed a tumour in the distal part of the duodenum with perforation and metastases in the liver. The 3rd patient, a 73-yr.-old female, died after icterus of 5 months' duration from embolism of the mesenteric artery and thrombosis of the portal vein. At autopsy a gelatinous cancer with a granular surface in the inferior horizontal part of the duodenum with peritoneal metastases was discovered. Symptomatology of duodenal cancer is considered and the literature is briefly reviewed. Györgyi - Budapest

YUFIN, Andrey Pavlovich. Prinimali uchastiye: CHERNOSKUTOV, K.A.inzh.; ZHIVOTOVSKIY, L.S., dots., kand. tekhn. nauk; VOLNIN, B.A., dots., kand. tekhn. nauk; DOLGACHEV, F.M., dots., ~~zam.~~ tekhn. nauk; FILIMONOVA, I.V., kand. tekhn. nauk; MAL'TSEV, M.V., kand. tekhn.nauk; TARASOV, V.K., kand. tekhn. nauk; KHOLIN, N.D., prof., retsenzent; OGORODNIKOV, S.P., dots., kand. tekhn. nauk, retsenzent

[Hydromechanization] Gidromekhanizatsiya. Moskva, Stroizdat,  
1965. 496 p. (MIRA 18:8)

VOLVIN, B.A., kandidat tekhnicheskikh nauk.

Drainage design using the wash method. Gidr.stroi.25 no.5:15-17  
Jo '56. (Dans) (MIRA 9:9)

|   |                       |                         |
|---|-----------------------|-------------------------|
| AUTHOR:<br>Brodskoi, S.F., Chairman<br>Conference on Scientific Research in the Field of<br>Hydromechanics  | PAGE:<br>62-65 (USSR) | DATE:<br>1959, Mr 7, pp |
| <i>Vol. NIN, B.7.</i>   |                       |                         |
| ABSTRACT:<br><br>The article is a chronicle of the above-named conference, which was held in Moscow April 15-17, 1959, on the initiative of the coordinating committee for hydromechanics in the Council for Hydromechanical Affairs of the Academy of Sciences of the USSR. The All-Union RANS Hydromechanics Trust, the Hydromechanics Institute of the Academy of Sciences of the USSR and the Moscow oblast board of the Technical University participated in the organization of the conference, which was attended by more than 400 representatives of 149 organizations, including the Committee of State Construction of the USSR, main trustee of national economic councils, institutes of the Academy of Sciences of the USSR and the union republics, the ASIA of the USSR and the Ukrainian SSR, the Union of Agricultural Engineers and the Union of the USSR of official scientific and technical scientific and academic research institutions. The conference was opened by Academician L.N. Goryainov, and at the plenary session speeches were read by the following: Prof. A.P. Tuzhilin, Doctor of Technical Sciences, "The Scientific Research Work in the Field of Hydro-mechanics"; Engineer V.I. Platonov, "The Construction of Irrigation Dams and the Work of Scientific Organizations"; Engineer M.A. Gordei, "The Present State of and the Outlook for Design and Research Work in the Field of Equipment for Hydromechanics"; Engineer S.B. Yosel'yan, "Certain Problems of the Economy of the Hydromechanization of Earth Works"; Prof. G.A. Murck, Doctor of Technical Sciences; "The Present State of and the Outlook for the Development of the Hydromechanization of Open-cast Coalmining"; Engineer S.M. Shlyandrenko, "Means of Perfecting Hydromechanics in the Steel-Metallic Mineral Industry". The residence of the conference was divided into 3 sessions on technology and transport. At the session dealing with technology papers were read by the following: Prof. M. M. Kostylev, Doctor of Technical Sciences, "Problems in the Planning of Irrigation Dams"; Prof. I. V. Tsvetkov, Candidate of Technical Sciences (Institute of Hydromechanics), "Peculiar Features of the Distinction and Combination of Soil Foundations and Foundations of Technical Structures (Fridzh); Candidate of Technical Sciences (Fridzh), "Friedrich All-Union Construction", Prof. V. V. Vichnevetsky, Candidate of Technical Sciences (B.R. Vedenyapin) and V. P. Kostylev, Candidate of Technical Sciences (Institute of Hydromechanics), "Foundations of the Academy of Sciences of the USSR and the Consolidation of Foundations of the Foundations of the Key Parts of Earth Dams"; Prof. I. P. Kalpachnikov, "Research on Alluvial Construction by Means of Cohesive Foundations"; M.P. Kurnikov, Candidate of Technical Sciences, "The Fertilization of Foundations by Means of Lime Foundations"; Prof. N. N. (V.V. Kurshakov) Kusil, "The Alluvial Construction of the Sary-Taryak dam on the Murgas River by Means of Fin-Grained Sand"; L. A. Kuznetsov, Candidate of Technical Sciences ("All-Union Institute VIZ"), "Research into the Morphological Qualities of Sand Foundations"; Prof. N. N. (V.V. Kurshakov) Kusil, "Research of the Influence of the Properties of Sand Foundations on the Load Capacity of Foundations"; N. N. (V. V. Kurshakov) Kusil, "Isolation of Foundations of Technical Sciences"; A. M. Shchukin, Candidate of Technical Sciences, "Method of Calculating the Drawing Rate of Frozen Foundations on the Upper Slope of Sand Dunes when Constructed on Water"; Dr. N. N. Kellman, Candidate of Technical Sciences (Fridzh), "Hydro- and Engineer K.P. Kolyavlev, "Problems of Spanning Rivers without the Use of Banks"; | Card 1/6              |                         |
|   |                       | Card 2/6                |
|   |                       | Card 3/6                |

ZVONTSOV, Avdey Avdeyevich, inzhener; VOLNIN, B.A., redaktor; VORONIN, K.P.,  
tekhnicheskiy redaktor

[Alluvium of the Mingechaur Dam] Nauky Mingechaurskoi plotiny. Moskva,  
Gos. energ. izd-vo, 1956. 70 p. (MIRA 9:12)  
(Mingechaur Reservoir)

VOLNIN, B.A., dots., kand.tehn.nauk

Density of ground packing in hydraulic fill operations. Nauch.dokl,  
vys,shkoly; stroi. no.3:111-114 '58. (MIRA 12:7)

1. Rekomendovana kafedroy proizvodstva i organizatsii giidrotekhnicheskikh rabot Moskovskogo inzhenerno-stroitel'nogo instituta imeni V.V. Kuybysheva.

(Earthware)

SOV/98-59-7-7/22

8(6), 14(6)

AUTHOR: Volnin, B. A., Candidate of Technical Sciences

TITLE: Hydraulic-Fill Dams on the Kam'skaya GES

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 7, pp 32  
- 37 (USSR)

ABSTRACT: The article describes the process used in the building of dams by means of alluvial material. Figs 1 and 2 are cross-sections of the dams in question, showing the layers of alluvia used. The foundation material was fine sand and gravel, used either independently or in combination. Fig 3 illustrates the draining system installed in the river-dam. Brief descriptions of the construction of the bases of the dams follow: the river-dam is 1,303 m long and 19 m high. Fig 4 provides details of the size and the proportion of the sand and gravel, based on calculations according to Z.I. Konstantnaya's method. The peat covering the dam base was partially removed to allow for drainage and covered with loamy soil. Figures are given for the subsidence of the earthworks and the method of construction used on the dam is described (dredgers, pioneer methods and scaffolding).

Card 1/2

SOV/98-59-7-7/22

**Hydraulic-Fill Dams on the Kamskaya GES**

The upstream embankment slope was formed of the sand and gravel mixture described above and then covered with 20-80mm. rubble. Table 1 contains data on the properties of the materials used in the construction of various parts of the dam, but the author points out the insignificant variation in the density of the different compounds. The river bed dam is situated on the left part of the bed of the Kama and is 525 m long and 35 m high. Due to a shortage of small gravel in the borrow pit, which had been used up on the river-dam, the core in the other dam was replaced in this case by a cutoff wall requiring less gravel. A crib cofferdam was put across the river at the base of the future upstream slope and another borrow pit was flooded, enabling more gravel to be obtained from it (Type 300-4 dredger used). The construction of the foundation plinth, cutoff wall and lower and upper prisms is then briefly sketched, and the results obtained from Fig 5 and Table 2 (parallel to those cited in the description of the first dam) are analysed. There are 3 diagrams, 2 tables, and 2 graphs.

Card 2/2

VOLNIN, B. A.

Hydraulic machinery used for construction of water-power electric plants. Moskva, Gos. energ. izd-vo, 1951. 71 p. (Biblioteka rabochego-stroitelia GES, vyp. 6) (54-17522)

TK108.V65

1. Water-power electric plants. 2. Hydraulic machinery

VOLNIN, B A

N/5

661

.V9

Iz opyta izyskaniy kontrolya i issledo-vaniy pri vozvedenii  
namyvnykh sooruzheniy (Prospecting, control and analysis of  
hydraulic fill structures) Pod. red. V. D. Zhurina. Moskva,  
Gosenergoizdat, 1953. 47 p. graphs, tables.

VOLNIN, B. A.

Iz opyta izyskanija, kontroli i issledovanii pri vozvedenii namyvnykh scoruzhenii  
[Experience in the investigation, control and on study of hydraulic  
fill installations]. Moskva, Gosenergoizdat, 1953. 48 p.

SO: Monthly List of Russian Accessions, Vol. 7 No. 2 May 1954.

VOLNIN, B.A., kand.tekhn.nauk

Hydraulic-fill construction of earth dams. Gidr. stroi.  
JO no. 6:24-27 Je '60. (MIRA 13:?)  
(Dams)

VOININ, B. A.

VOININ, B.A., kandidat tekhnicheskikh nauk; ZHURIN, V.D., professor,  
doktor tekhnicheskikh nauk, redaktor; TISTROVA, O.N., redaktor;  
SKVORTSOV, I.M., tekhnicheskiy redaktor.

[Prospecting, control and analyses of hydraulic fill structures]  
Iz opyta issledovaniya i kontrolya pri vvedenii na-  
myvnykh sooruzhenii. Pod red. V.D. Zhurina. Moskva, Gos. energ. izd-  
vo. 1953. 47 p. (MIRA 7:7)  
(Volga River--Hydraulic engineering) (Hydraulic engineering--  
(Earthwork) Volga River)

USPENSKIY, B.S., inzhener; VOLNIN, B.A., inzhener; KORKHOVA, V.I., inzhener.

Hydraulic cleaning of the space in front of trash rakes of hydroelectric power plants. Gidr.stroi. 22 no.8:37-38 Ag '53. (MLRA 6:8)  
(Hydroelectric power stations)

VOLNIN, B.A., dots., kand.tekhn.nauk

Applying geotechnical control in using hydraulic fill methods.  
Nauch.dokl.vys.shkoly; stroi. no.2:125-133 '58.  
(MIRA 12:1)

(Dams)

VOLNIN, Boris Aleksandrovich, kand.tekhn.nauk; KARP, Ye.M., red.; VORONIN,  
K.P., tekhn.red.

[High hydraulic and semihydraulic dams in the U.S.A.] Vysokie  
namyvnye i polunamyvnye plotiny SShA. Moskva, Gos.energ.izd-vo  
1958. 87 p. (MIRA 12:4)

(United States--Dams)

VOLNIN, Boris Aleksandrovich, kandidat tekhnicheskikh nauk; TIZDEL', R.R.,  
reliaktor; VORONIN, K.P., tekhnicheskiy redaktev.

[Studies in excavations for hydraulic fill dams] Issledovanie kar'erev  
dlja namyvnykh pletin i damb. Moskva, Gos.energ.izd-vo, 1956. 47 p.  
(Dams) (MLRA 9:4)

VOLNIN, Boris Aleksandrovich; ROZINOYER, S.T., red.

[Technology of hydraulic machinery in hydraulic construction] Tekhnologija gidromekhanizatsii v gidrotehnicheskem stroitel'stve. Moskva, Energiia, 1965.  
199 p. (MIRA 18:2)

SOV/137-58-8-16748

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 74 (USSR)

AUTHORS: Ustinov, D.V., Vol'nin, N.A.

TITLE: Technical Assistance to the "Krasnyy vyborzhets" Plant (Saving Copper From Tailings) [Tekhpomoshch' zavodu "Krasnyy vyborzhets" (ulavlivaniye medi iz otkhodov) ]

PERIODICAL: [Tr.] Vses. n.-i. i proyektn. in-ta mekhan. obrabotki poleznykh iskopayemykh, 1957, Nr 102, pp 331-335

ABSTRACT: A description is provided of plant to separate splashes of brass from slag and molding sand by comminution of the tapped slag and other discards in a ball mill and by pneumatic separation of the pulverized material in a conical separator. The equipment designed by the Mekhanobr Institute, and built and installed at the "Krasnyy vyborzhets" plant, is capable of handling 8-9 t of charge per shift. Operation thereof made is possible to reduce the losses of Cu with the slags from 1.7 to 0.6%, and this is not even the limit attainable. The light fraction of the air separation process contains a considerable amount of ZnO dust. Ye. Z. I. Copper--Separation

Card 1/1 2. Pneumatic systems--Performance

YEGOROV, K.D., kand.ekon.nauk; TROSHINA, A.P.; KOVALEV, P.P.; NOVIKOVA, A.A.; LAGUTINA, M.V.; VOLINA, N.A.; SHESTAKOVA, R.V.; AKIMCHENKO, O.Ye.; KULEBAKIN, V.S., akademik, red.; VEITS, V.I., red.; BUTENKO, A.F., kand.filosof.nauk, red.; RYBINSKIY, M.I., red.; CHASHNIKOVA, M.V., red.; NIZHNYAYA, S., red.; VOSKRESENSKAYA, T., red.; CHEKHUTOVA, V., red.; RKLITSKAYA, A.D., red.; CHEPELEVA, O., tekhn.red.

[Works of the State Commission for the Electrification of Russia; documents and materials] Trudy Gosudarstvennoi komissii po elektrifikatsii Rossii GOELRO; dokumenty i materialy. Red.komissiiia: V.S.Kulebakin and others. Moskva, Izd-vo sotsial'no-ekon.lit-ry, 1960. 306 p. (MIRA 14:2)

1. Russia (1917- R.S.F.S.R.) Gosudarstvennaya komissiya po elektrifikatsii Rossii. 2. Chlen-korrespondent AN SSSR (for Veyts). (Electrification)

VOLNIN, V. A.

Technology.

(Hydromechanization in the construction of hydroelectric stations). Moskva,  
Gos. energ. izd-vo, 1951.

9. Monthly List of Russian Accessions, Library of Congress, July 1952 Uncl.

VOLNINA, N. V.

VOLNINA, N. V.--"On Fields with Expanded Groups of Polyhedrons." Leningrad Order of Lenin State U imeni A. A. Zhdanov. Leningrad, 1955. (Dissertation for the Degree of Candidate of Physicomathematical Sciences).

SO: Knizhnaya Letopis' No. 27, 2 July 1955

SUBJECT      USSR/MATHEMATICS/Algebra  
AUTHOR        VOLNINA N.V.  
TITLE         On fields with extended polyhedron groups.  
PERIODICAL    Doklady Akad. Nauk 105, 889-892 (1955)  
                reviewed 11/1956

CARD 1/1

PG - 406

In the present paper the question of the imbeddability of Galois fields with a polyhedron group in Galois fields with a polyhedron group extended according to Klein, is reduced to the question for the isomorphy of certain quaternion algebras.

VOLNTINA, N.V.

O priyodimosti polinomov v irratsional'nykh polyakh. DAN, 58 (1947), 1873-1876.

So: Mathematics in the USSR, 1917-1947

edited by Kurosh, A.G..

Markushevich, A.I.,

Rashevshiy, P.K.

Moscow-Leningrad, 1948

VOLNINA, N.Y.

Fields with extended polyhedron groups. Dokl. AN SSSR 105 no.5:  
889-892 D '55. (MLRA 9:3)

1. Kaliningradskiy gosudarstvenny pedagogicheskiy institut  
Predstavleno akademikom P.S. Aleksandrovym.  
(Fields, Algebraic)